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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,071	01/28/2004	Chae-Whan Lim	46245	9479

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EXAMINER
ABDI, AMARA

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/765,071	LIM ET AL.	
	Examiner	Art Unit	
	AMARA ABDI	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/10/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 8, 2008 has been entered.

2. Applicant's response to the last Office Action, filed February 8, 2008 has entered and made of record.

3. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simard et al. (US 7,024,039) in view of Viscito et al. (US 6,782, 135) and Serizawa et al. (US 5,809,183).

(1) Regarding claims 1 and 11:

Simard et al. disclose a system (device) and method (column 1, line 16-17) for extending a character region in an image (column 6, line 15-16), comprising:

an input part (100 in Fig.1) for receiving an input image (column 6, line 17-20);

a block classification part (100 in Fig. 1) for classifying the input image into character blocks (foreground) and background blocks, and converting pixels in the character blocks into pixels having a first brightness value and pixels in the background blocks into pixels having a second brightness value (column 6, line 41-44), (it is read that the element 100 of Fig. 1 receives an input image, and additionally classifying the input image into foreground or background).

a position search part (110 in Fig. 1) for searching for left, right, top and bottom positions of a character region by horizontally and vertically scanning the block-classified image, and determining a position of the character region (column 8, line 1-7), (the examiner interpreted that the boundary detector has the same function as the position search part since it identifies the merged region boundary for which one side is foreground and other side is background therefore it determines the position of the character region);

substantially separating the character region from a background region (column 9, line 38-44), (it is read that the mask separator (130 in Fig. 9) indicating whether each pixel of the document image belongs in the foreground or background)

an ROC extension part (120 in Fig. 1) for extending the detected image of the character region to a size of the input image (column 6, line 50-52).

Simard et al. do not explicitly mention the following items:

1) using block energy values;

2) using a threshold value, and a region of contents (ROC) extraction part for extracting an image in the determined position of the character region from the input image.

(A) Concerning item 1):

Viscito et al., in analogous environment, teaches an apparatus and method for adaptive digital video quantization, where using block energy values (column 56-63).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Viscito et al., where using block energy values, in the system of Simard et al. because such feature provides an accurate and an efficient method for a picture quantization and enables lower more optimally distributed bit rate video compression, also the information can be analyzed accordance with significant picture attributes out (column 3, line 1-2).

(B) Concerning item 2):

Serizawa et al., in analogous environment, teaches a method and apparatus for recognizing character information at a variable magnification, where using a threshold values (S501, Fig. 5, column 9, line 13-18), and extracting the character region to be recognized (Step S408, column 8, line 48-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Serizawa et al., where extracting the character

region, in the system of Simard et al. in order to define the normalized character image with sufficient accuracy to achieve high recognition accuracy (column 1, line 22-24).

6. Claims 2-3, and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simard et al., Viscito et al. and Serizawa et al., as applied to claims 1 and 11 above, and further in view of Hirabayashi (US 5,900,910)

(1) Regarding claims 2 and 12:

Simard et al., and Serizawa et al. disclose all the subject matter as described in claims 1 and 11 above. Furthermore, Simard et al. disclose a method and a block classification part, which comprises an image division part for dividing the input image into blocks having a predetermined size (column 3, line 26-27); Furthermore, Serizawa et al. disclose the comparing of a region size to the threshold (column 9, line 13-18), (the comparing of the region size to the threshold is read as the same concept as the comparing of the energy values to the threshold)

Simard et al., and Serizawa et al. do not explicitly mention the following items:

1) a discrete cosine transform (DCT) conversion part for DCT-converting the divided blocks; an energy calculation part for calculating a sum of absolute values of dominant DCT coefficient; a threshold calculation part for summing up the energy calculated, and generating threshold by dividing the summed energy value by the total number of the blocks; and a classification part, classifying the blocks into character blocks or background; and

2) a block filling part for filling the character blocks and background blocks with pixels having first and second brightness respectively.

(A) Concerning item 1):

Viscito et al., in analogous environment, teaches a method and system of a discrete cosine transform (DCT) conversion part (306 in figure 3a.), (column 6, line 18), and an energy calculation part (701 in figure 7) for calculating a sum of absolute values (column 9, line 60) and outputting the calculated sum as an energy value of a corresponding blocks (column 9, line 56-63); and a threshold calculation part (806 in figure 8) calculation for summing up the energy values calculated (column 9, line 61-63), and generating the threshold by dividing the summed energy value by the total number of the blocks (column 9, line 63-65); and a classification part (figure 10b) for classifying the blocks (column 11, line 58-61) and (column 12, line 1-4) by comparing the received block energy values with the threshold (column 12, line 14-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Viscito et al., where the block classification comprises a discrete cosine transform, an energy calculation part, a threshold calculation part, and a classification part in the system of Simard et al. because such feature provides an accurate and an efficient method for a picture quantization and enables lower more optimally distributed bit rate video compression, also the information can be analyzed accordance with significant picture attributes out (column 3, line 1-2).

(B) Concerning item 2):

Hirabayashi et al. in analogous environment, teaches a block filling part for filling the character blocks (block A), with pixels having the first brightness value and filling background blocks (block B) with pixels having the second brightness value (column 4, line 66, and column 5, line 15) (The examiner interpreted the character blocks as blocks A and background blocks as blocks B).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Hirabayashi et al., which comprises a block filling part, in the system of Simard et al., because such feature will provide a movement vector which can detect a reliable movement vector (column 2, line 13-14).

(2) Regarding claims 3 and 13:

Simard et al. and Serizawa et al. disclose all the subject matter as described in claims 2 and 12 above.

Simard et al. and Serizawa et al. do not explicitly mention a device and method where each of the blocks has a size of 8x8 5 pixels, and an energy value.

Viscito et al., in analogous environment, teaches a method and system where each block has 8 row by 8 column pixel block (column 9, line 55), where the DCT coefficient values are accumulated (summed) (column 9, line 53) (calculate the absolute value thereby avoiding the use of negative values) (column 9, line 60), (the examiner interpreted that Viscito et al. using the same principal to determine the energy except, he is dividing the absolute value of summed energy by 64 which is the number of pixels therefore he is determining the threshold for each pixel).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Viscito et al., where the sum of the absolute values of dominant DCT are calculated, in the system of Simard et al., because such feature provides a rough approximation of how distortion generally tends to combine into an integrated whole in a picture (column 2, line 35-36) and enabling accurate and efficient video quantization and it will be possible for modeling the human visual system (column 2, line 55-57).

7. Claims 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simard et al., Viscito et al. and Serizawa et al., as applied to claims 1 and 11 above, and further in view of Kodaria et al. (US 6,043,823).

Simard et al., Viscito et al. and Serizawa et al. disclose all the subject matter as described in claims 1 and 11 above.

Simard et al., Viscito et al. and Serizawa et al. do not explicitly mention that the character region has an aspect ratio of the input image.

Kodaria et al., in analogous environment, teaches a document processing system which can selectively extract and process regions of documents, where the character region has an aspect ratio of the input image (column 27, line 52-55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Kodaria et al., where using an aspect ration of the input image, in the system of Simard et al., because such feature makes the length

allowing to merge characters adjacent to each other in one row when the input image has relatively large tilt (column 30, line 46-48).

8. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simard et al., Viscito et al. and Serizawa et al., as applied to claims 1 and 11 above, and further in view of admitted prior art (see pages 18 and 19 in the specification).

Simard et al., Viscito et al. and Serizawa et al. disclose all the subject matter as described in claims 1 and 11 above.

Simard et al., Viscito et al. and Serizawa et al. do not explicitly mention the method and device where the ROC extension part performs bilinear interpolation of the extracted image of the character region according to the equation.

the admitted prior art discloses the interpolation method and operation (equation (4), page 18, line 28).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the interpolation equation of the admitted prior art in the system of Simard et al. because such feature makes the size of the image of the extracted character region equal to that of the input image which will make the extension of character image to the size of the input image (page 19, line 2-3).

9. Claims 6-8 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simard et al. (US 7,024,039) in view of Viscito et al. (US 6,782, 135), Serizawa et al. (US 5,809, 183), and Otsuka (US 6,731,820).

(1) Regarding claims 6 and 16:

The same rejection of claims 1 and 11 applies to claims 6 and 16.

Simard et al., Viscito et al., Serizawa et al., do not explicitly mention the median filter for performing median filtering on an image output from the block classification part to remove blocks erroneously classified as character blocks.

Otsuka, in analogous environment, teaches an image filter circuit and image filtering method, where using the median filter for performing median filtering on an image output (See the Abstract, line 1-2) from the block classification part to remove blocks erroneously classified as character blocks (Paragraph [0016], line 6-7), (it is read that the function of eliminating of dot noise in an image by the median filter is the same as the removing of the character blocks).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Otsuka, where using the median filter, in the system of Simard et al., in order to provide an image filter circuit and an image filtering method for realizing a large-scale nonlinear filter as a digital circuit (column 1, line 63-65)

(2) Regarding claims 7 and 17:

Simard et al., Viscito et al., Serizawa et al. disclose all the subject matter as described in claims 6 and 16 above.

Simard et al., Viscito et al., Serizawa et al. do not explicitly mention the device, where the median filter determines isolated character blocks as erroneously classified character blocks.

Otsuka, in analogous environment, teaches an image filter circuit and image filtering method, where the median filter determines isolated character blocks as erroneously classified character blocks (paragraph [0016], line 6-7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Otsuka, where determining isolated character blocks as erroneously classified character blocks, in the system of Simard et al., in order to provide an image filter circuit and an image filtering method for realizing a large-scale nonlinear filter as a digital circuit (column 1, line 63-65)

(3) Regarding claims 8 and 18:

The same rejection of claims 6 and 16 applies to claims 8 and 18.

Simard et al., Viscito et al., and Serizawa et al., do not explicitly mention the mean filter for performing mean filtering on the input image to blur the input image.
Otsuka, in analogous environment, teaches an image filter circuit and image filtering method, where the mean filtering is performed (S101 and S102 in figure 11, paragraph [0078], line 1-3, and (paragraph [0079], line 1-4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Otsuka, where performing a median filtering, in the system of Simard et al., in order to provide an image filter circuit and an image filtering method for realizing a large-scale nonlinear filter as a digital circuit (column 1, line 63-65).

10. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simard et al. (US 7,024,039) in view of Viscito et al. (US 6,782, 135), Serizawa et al. (US 5,809, 183), Otsuka (US 6,731,820), and Kondo et al. (US 5,966,183).

The same rejection of claims 8 and 18 applies to claims 9 and 19.

Simard et al., Viscito et al., Serizawa et al., and Otsuka do not explicitly mention the subsampling part for subsampling pixels in the image output from the block classification part to reduce the number of the pixels; and an interpolation part for performing interpolating on the median filtered image to extend the median filtered image to a size of the input image.

Kondo et al., in analogous environment, teaches a signal conversion method, where subsampling pixels in the image (column 6, line 44-45), and the interpolated part for performing interpolation on the median filtered image (see abstract), (column 2, line 30-32), (it is read that the interpolation function from pixels of the input image is the same as the interpolation function from pixels of the median filter image).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Kondo et al., where performing interpolation, in the system of Simard et al., because such feature converting the input image into high definition HD image with high prediction accuracy by suitably classifying and evaluating an input image (column 2, line 10-15).

11. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simard et al., Viscito et al., Serizawa et al., Otsuka, and Kondo et al., as applied to claims 9 and 19 above, and further in view of Astle (US 5,684,544).

Simard et al., Viscito et al., Serizawa et al., Otsuka, and Kondo et al. disclose all the subject matter as described in claims 9 and 19 above.

Simard et al., Viscito et al., Serizawa et al., Otsuka, and Kondo et al. do not explicitly mention the method and sampling part, which samples the pixels at the subsampling ratio as the formula recited in claims 10 and 20.

Astle, in analogous environment, teaches a method and apparatus for subsampling a chroma pixels, where subsampling part (300 in figure 3) subsampling the pixels using the ratio aspect (column 5, line 50-51), (the examiner interpreted the ratio aspect (4:1) as the ratio aspect recited in claim 10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Astle, where subsampling pixels, in the system of Simard et al., in order to provide an improved computer-implemented processes for upsampling chrominance signals (column 2, line 29-31), furthermore, some pixels are typically subsampled by representing multiple pixels with a single pixels, so the multiple pixels can be encoded and transmitted with smaller code size witch will increase the filtering process in the median filter part.

Contact Information:

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMARA ABDI whose telephone number is (571)270-1670. The examiner can normally be reached on Monday through Friday 8:00 Am to 4:00 PM E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wu Jingge can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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